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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,372	02/06/2004	Tomohisa Kato	248601US3	6781

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EXAMINER

ADDISU, SARA

ART UNIT PAPER NUMBER

3722

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/772,372	KATO ET AL.	
	Examiner	Art Unit	
	Sara Addisu	3722	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Drawings***

The objection to the Drawing on Office Action mailed 7/14/05 has been withdrawn due to the amendment to the Specification filed 10/14/05

### ***Response to Arguments***

Applicant's arguments, filed 10/14/05, with respect to the rejection(s) of claim(s) 1-6 have been fully considered and are persuasive. Therefore, the Double Patenting rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art reference.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller (USP 4,833,764), in view of Haller (USP 5,630,747).

MULLER teaches mounting a rotary table (36) rotatably around a first rotating axis (C) by a first rotary driving device, mounting a rotary base (50) on said rotary table (36) rotatably around a second rotating axis ( $B_1$ : which is perpendicular to C axis) by a second rotary driving device, mounting a tool holder ( $54_1$ ) on said rotary base (50) rotatably around a third rotating axis (axis being perpendicular to both the first and second rotating axis) by a third rotary driving device ('764, figure 1). MULLER also teaches setting a tool ( $56_1$ ) on said tool holder ( $54_1$ ). MULLER teaches that the existence and disposition of the translational axis W (i.e. the tool holder is straightly moved) allows the tool to be positioned such that its point of contact P with the workpiece (i.e. the machining point of the tool) is movable into the rotational axis B of the rotatable tool table 50 (i.e. the cutting point of the tool substantially coincides with the second rotational axis,  $B_1$ -axis as well as the third rotational axis) ('764, Figure 3 & Col. 6, lines 29-39). MULLER teaches a machine tool having three straight moving devices: a Y-axis moving unit (that is parallel to the first rotating axis (C)), a V- axis (redefined a Z-axis) moving unit and an X-axis moving unit to provide relative movements between a tool holders ( $54_1$ ) and a workpiece (46) ('764, figure 1). The rotary table (36) is mounted on the Y-axis moving unit as shown in figure 1). The V-axis (redefined a Z-axis) and X-axis moving units move worktable bed (8). MULLER also teaches carriage (32) (and consequently tool  $56_1$ ) moving in a Z direction. In addition to the tool being rotated by the rotary table (36) and rotary base (50), the Z- direction allows the tool to be moved until the tools axis (W) is

coincident with a normal direction of the machined surface ('764, figure 1).

Additionally, MULLER teaches that it is possible to operate with different tools therefore a specific tool can be selected such that the front rake surface of the tool is directed perpendicularly to the feeding direction of the tool ('764, Col. 9, lines 13-16). Regarding claims 2 and 4, MULLER teaches machine tool having linear main axes (X, Y and Z) rotational axes (A to C), and the additional linear movement axes (U, V and W) are all program-controlled (i.e. the program controller is the fine adjustment mechanism) and permit the possibility of program-controlled machining of workpieces of arbitrary shape without remounting of workpieces, starting from a blank and ending with a finished end product. ('764, Col. 6, lines 12-19).

However, MULLER fails to teach the cutting point of the tool substantially coinciding with the first rotational axis C (in addition to the second and third rotational axis, as mentioned above).

HALLER teaches mounting a rotary table (36) rotating around a first rotating axis, mounting a carrier arm (34) on said rotary table (36) and mounting a rotating tool holder (30) on carrier arm (34) ('747, figure 1). HALLER also teaches the construction of the rotating table (36) being selected such that the cutting disk (300), that is mounted on the tool holder (30), is placed exactly in the center of rotation (i.e. the cutting point of the tool substantially coinciding with the first rotational axis) ('747, Col. 3, lines 42-51).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify MULLER's invention such the rotary table (36) rotating around a first rotating axis (C) is positioned directly under the tool holder in such a manner that the cutting point of the tool substantially coincides with the first rotational axis, as taught by HALLER for the purpose of having a machine tool that can be constructed compactly and with savings in space, whereby a substantial cost advantage can be realized as compared to an embodiment according to the conventional design (such as MULLER, especially in the even that only one tool holder is dedicated to the machine tool instead of the four, 54<sub>1</sub>, 54<sub>2</sub>, 54<sub>3</sub> and 54<sub>4</sub>, shown in MULLER) ('747, Col. 2, lines 23-27) . Additionally, the positioning taught by HALLER makes it possible to grind radiuses, including full radiuses, without any problem ('747, Col. 2, lines 35-43).

2. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muller (USP 4,833,764), in view of Haller (USP 5,630,747) and further in view of Bach et al. (USP 6,039,634).

The modified device of MULLER teaches a machine tool. as set forth in the above rejection.

However, the modified device of MULLER fails to teach a workpiece spindle rotating about a fourth axis that is perpendicular to the first rotational axis.

BACH ET AL. teaches a machine tool having a workpiece spindle (14) rotating about a spindle axis (30) that is perpendicular to a vertical axis (38) ('634, figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify MULLER such that it incorporates a workpiece spindle rotating about a spindle axis that is perpendicular to the first rotational axis, as taught by BACH ET AL., for the purpose of grasping a workpiece to perform a particular machining operation that requires the workpiece to be held in such a manner to get the desired finish/shape.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Addisu at (571) 272-6082. The examiner can normally be reached on 8:30 am - 5 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3722

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SA  
12/19/05

  
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